

FIG.1

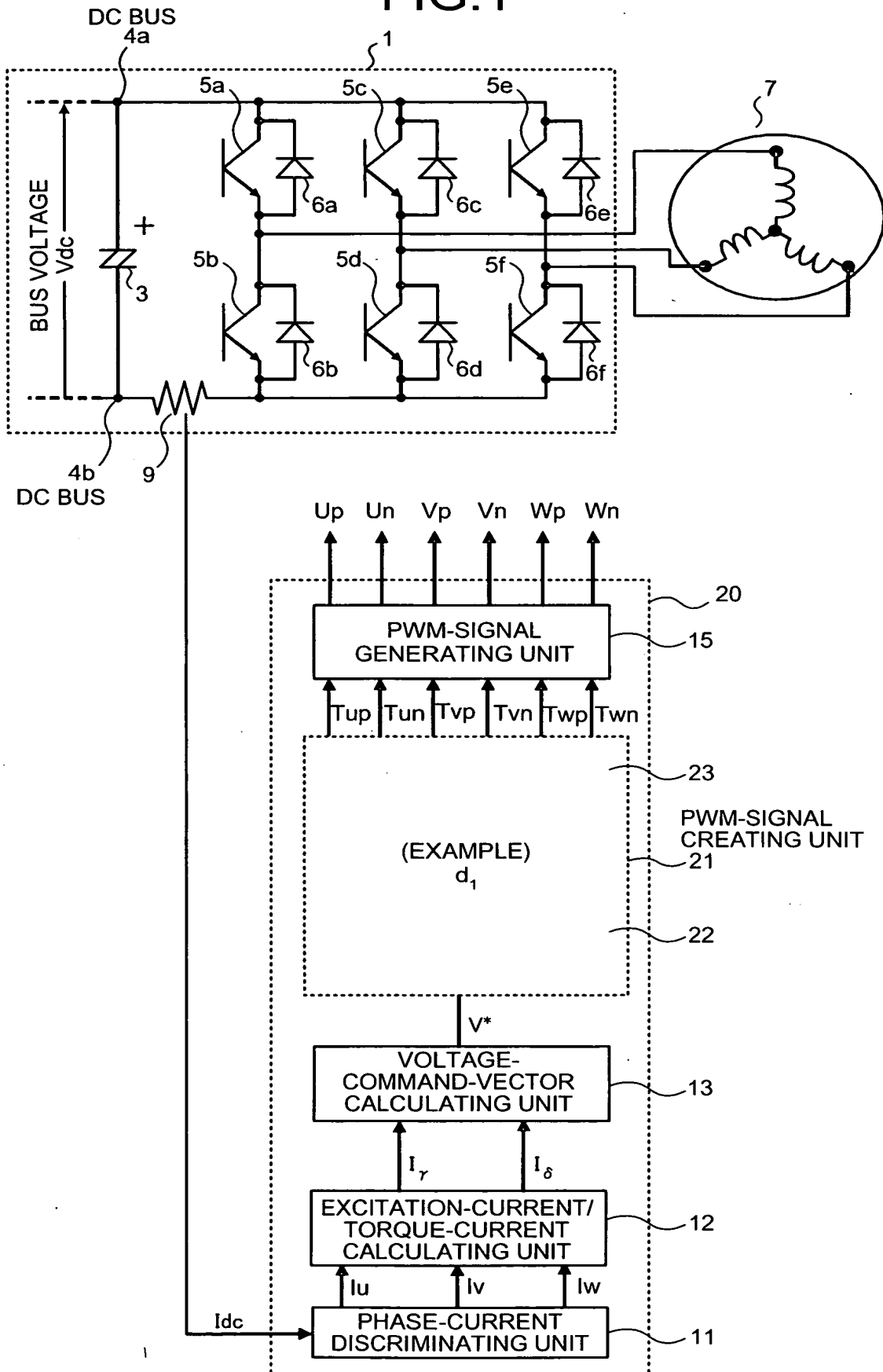


FIG.2A

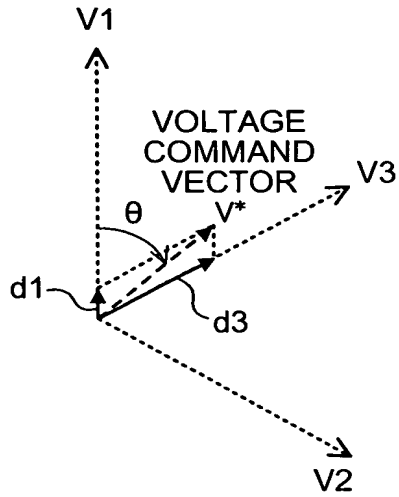


FIG.2B

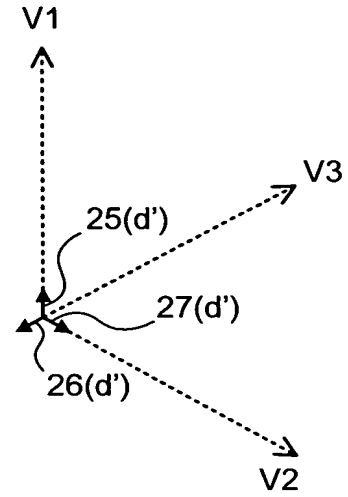


FIG.2C

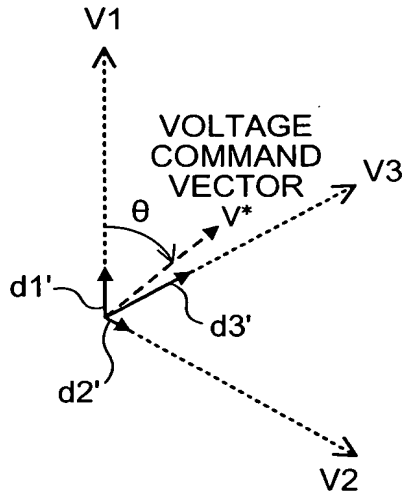


FIG.3A

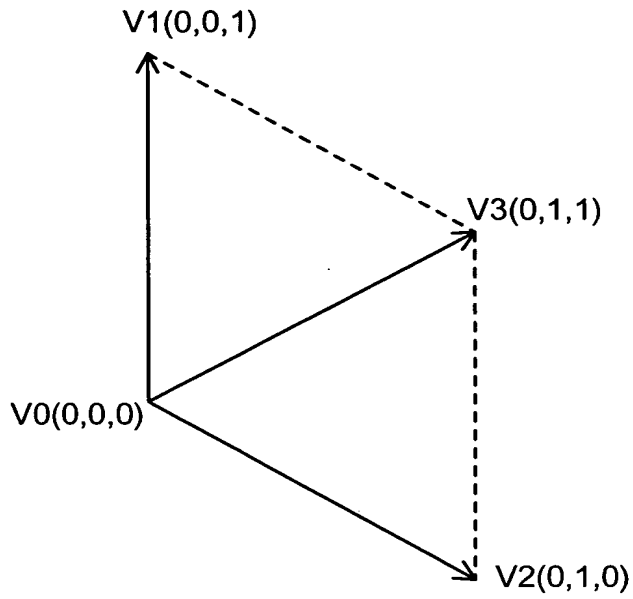


FIG.3B

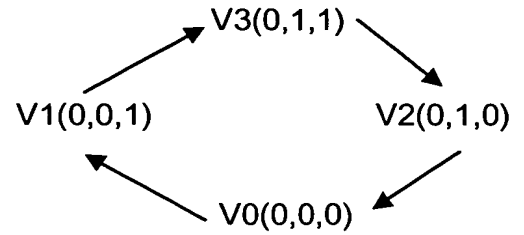


FIG.4

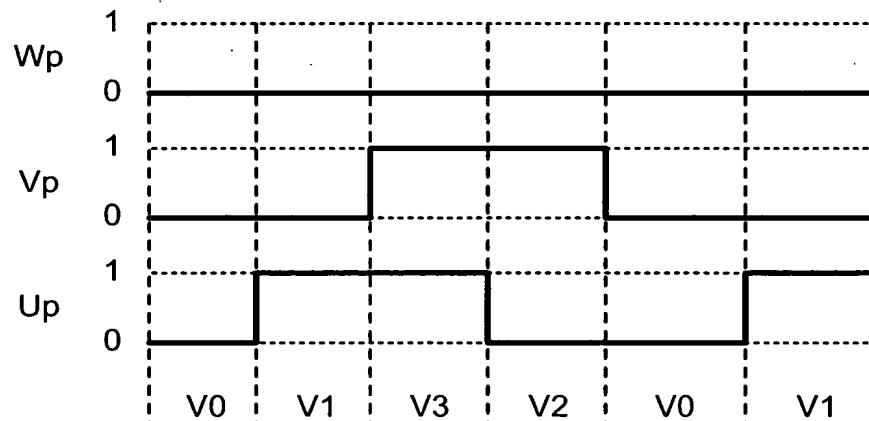


FIG.5A

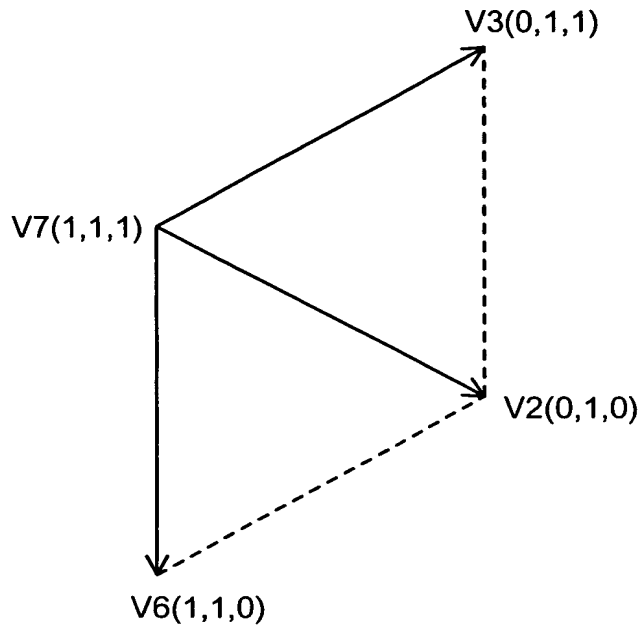


FIG.5B

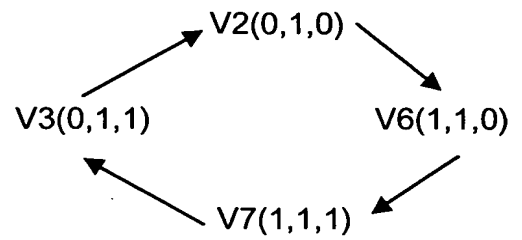


FIG.6

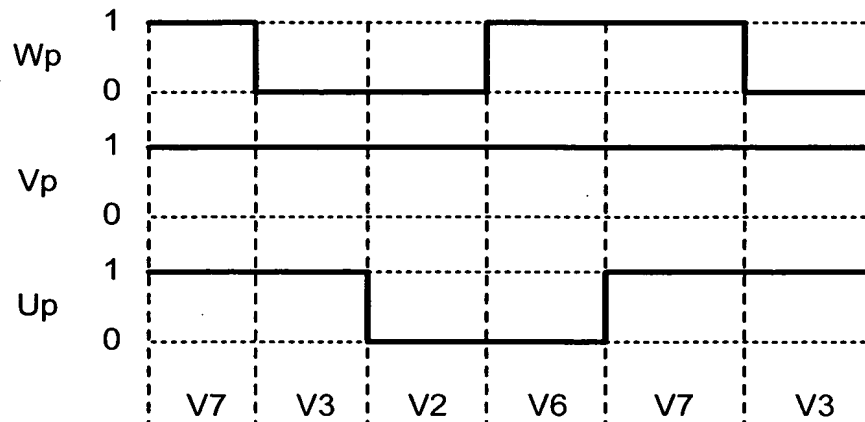


FIG.7A

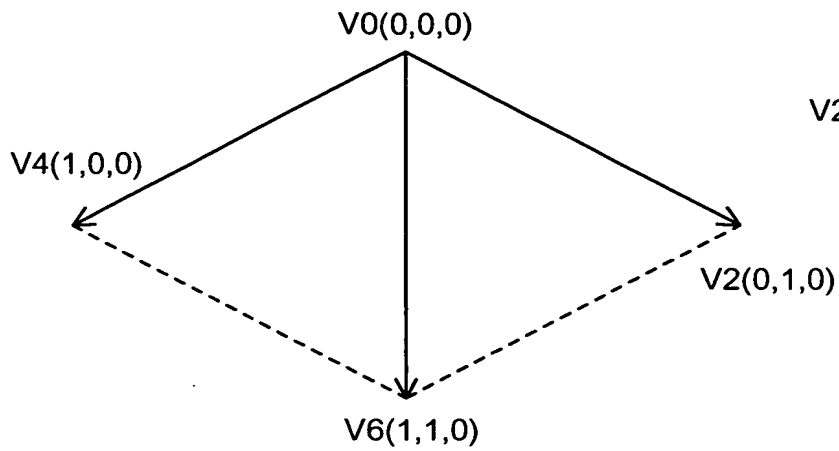


FIG.7B

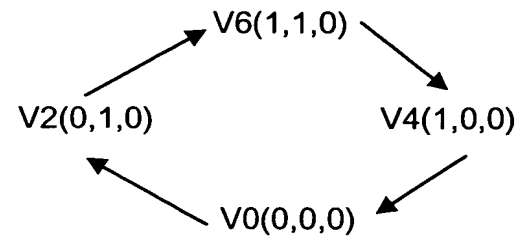


FIG.8

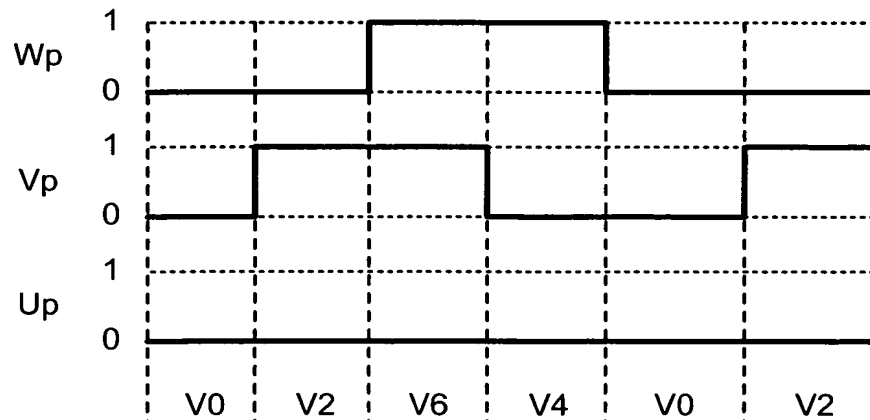


FIG.9A

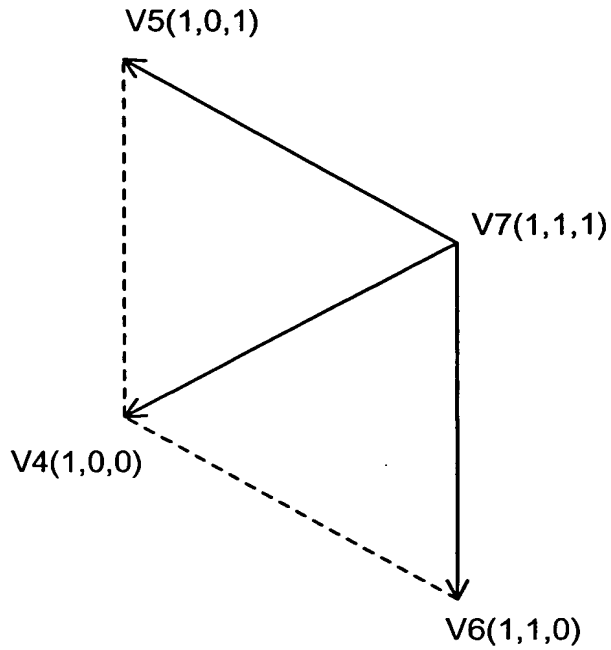


FIG.9B

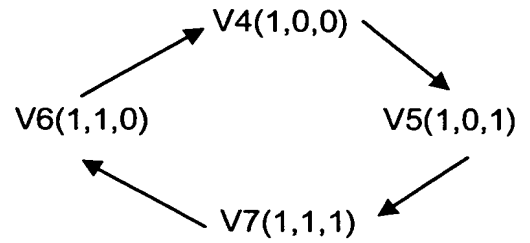


FIG.10

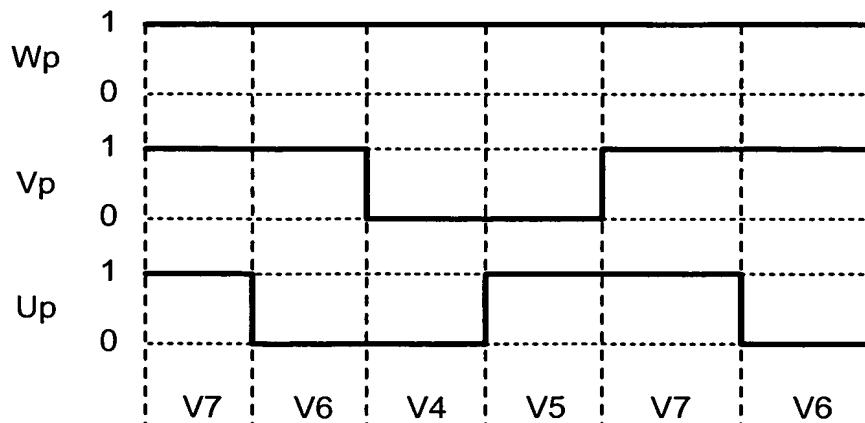


FIG.11A

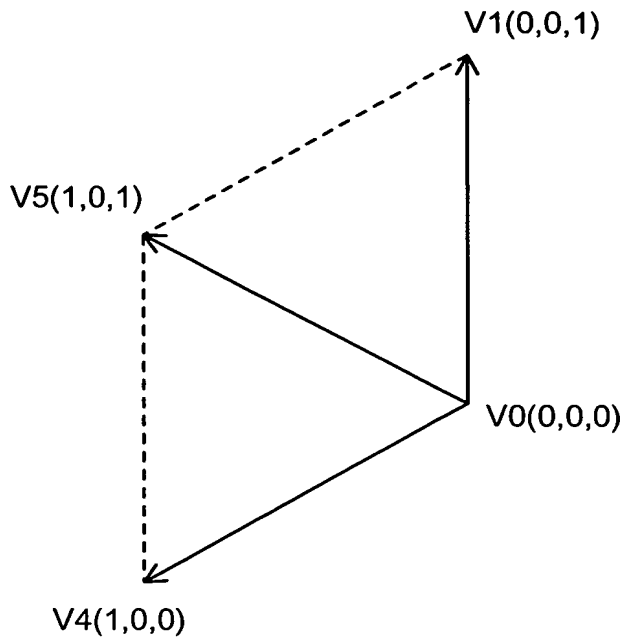


FIG.11B

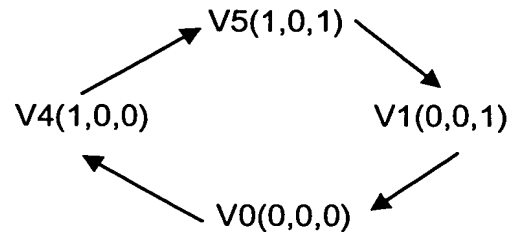


FIG.12

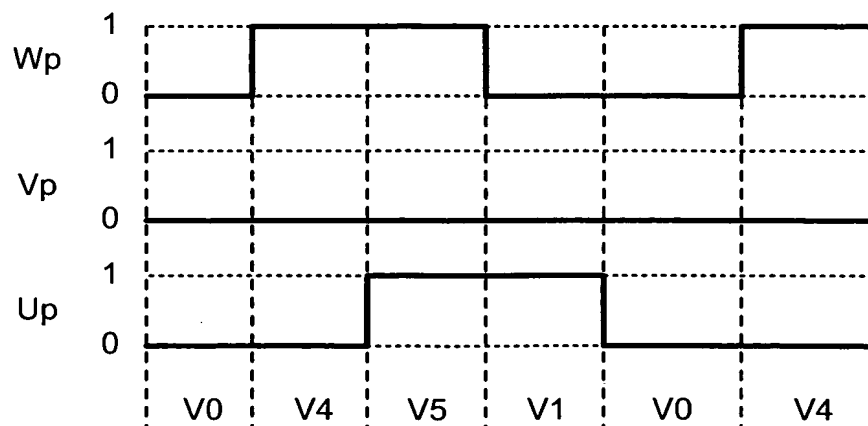


FIG.13A

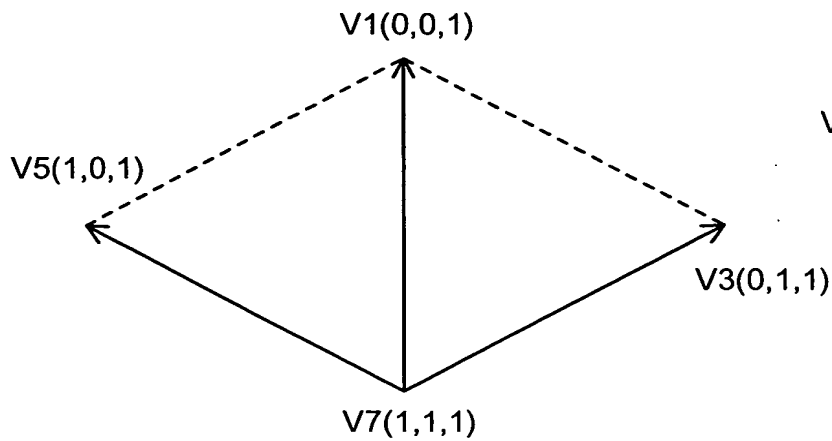


FIG.13B

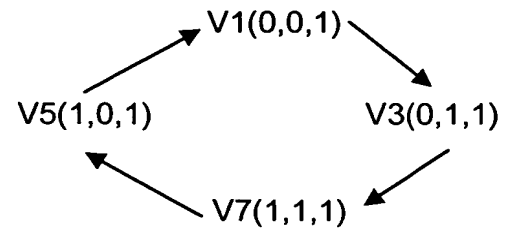


FIG.14

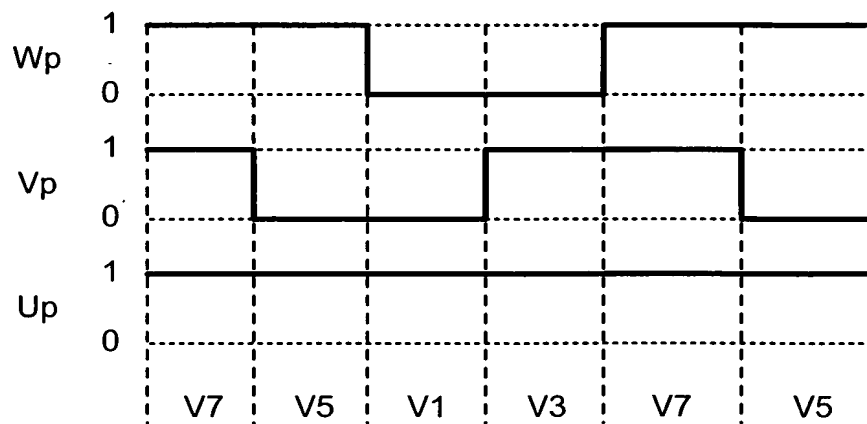




FIG.15A

| INVERTER ROTATION ANGLE                | PATTERN |
|--|---------|
| $0^\circ \leq \theta \leq 30^\circ$    | #6      |
| $30^\circ \leq \theta \leq 90^\circ$   | #1      |
| $90^\circ \leq \theta \leq 150^\circ$  | #2      |
| $150^\circ \leq \theta \leq 210^\circ$ | #3      |
| $210^\circ \leq \theta \leq 270^\circ$ | #4      |
| $270^\circ \leq \theta \leq 330^\circ$ | #5      |
| $330^\circ \leq \theta \leq 360^\circ$ | #6      |

FIG.15B

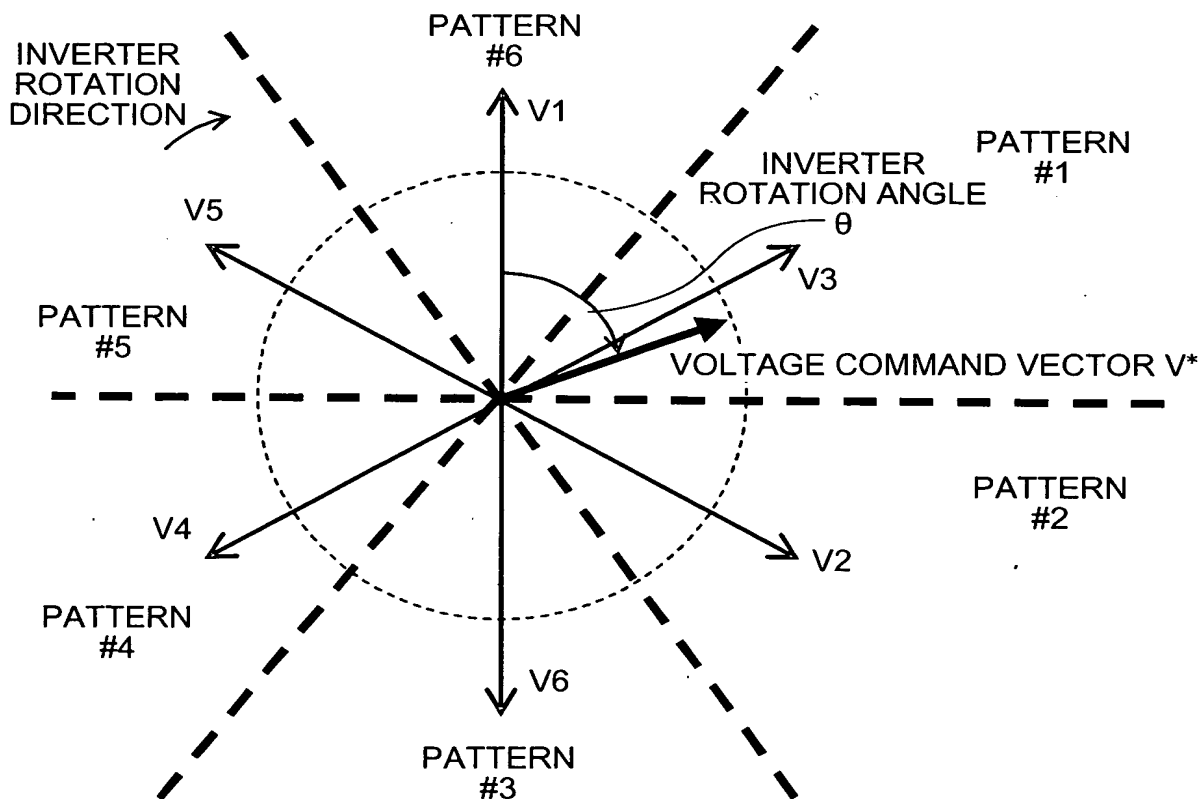


FIG.16A

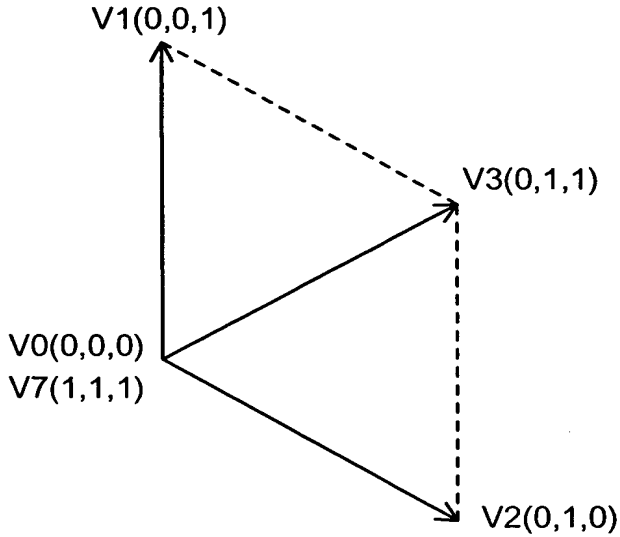


FIG.16B

- (a)  $V7 \Rightarrow V3 \Rightarrow V1 \Rightarrow V0 \Rightarrow V2$   
 (b)  $V7 \Rightarrow V3 \Rightarrow V1 \Rightarrow V0 \Rightarrow V2 \Rightarrow V3$   
 (c)  $V7 \Rightarrow V3 \Rightarrow V2 \Rightarrow V0 \Rightarrow V1$   
 (d)  $V7 \Rightarrow V3 \Rightarrow V2 \Rightarrow V0 \Rightarrow V1 \Rightarrow V3$

FIG.17A

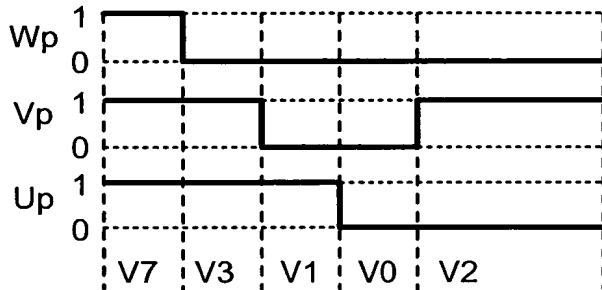


FIG.17B

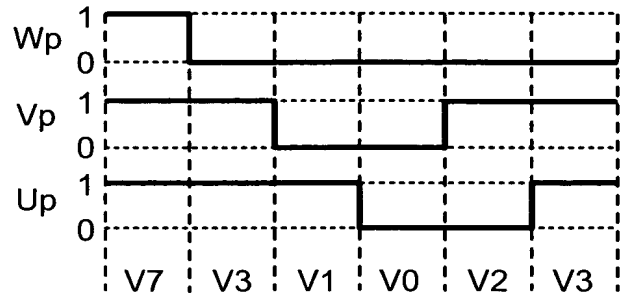


FIG.17C

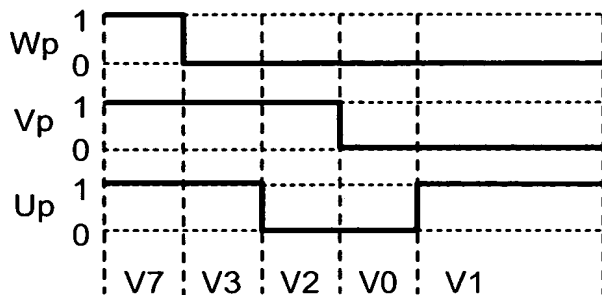


FIG.17D

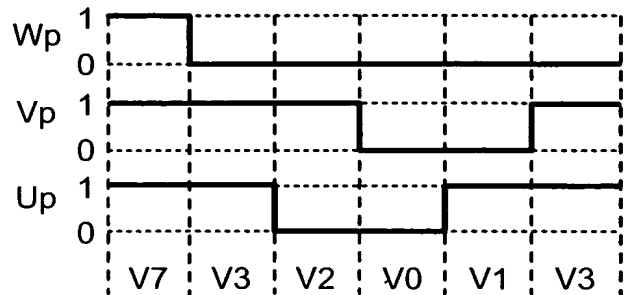


FIG.18A

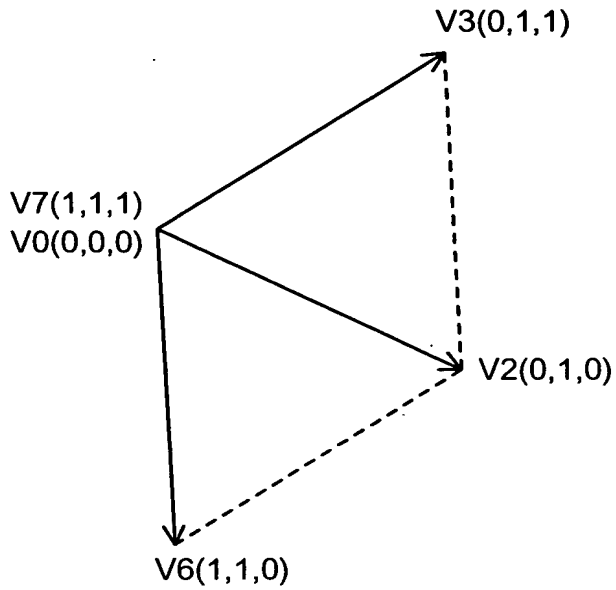


FIG.18B

- (a)  $V7 \Rightarrow V3 \Rightarrow V0 \Rightarrow V2 \Rightarrow V6$
- (b)  $V7 \Rightarrow V3 \Rightarrow V2 \Rightarrow V0 \Rightarrow V2 \Rightarrow V6$
- (c)  $V7 \Rightarrow V6 \Rightarrow V0 \Rightarrow V2 \Rightarrow V3$
- (d)  $V7 \Rightarrow V6 \Rightarrow V2 \Rightarrow V0 \Rightarrow V2 \Rightarrow V3$

FIG.19A

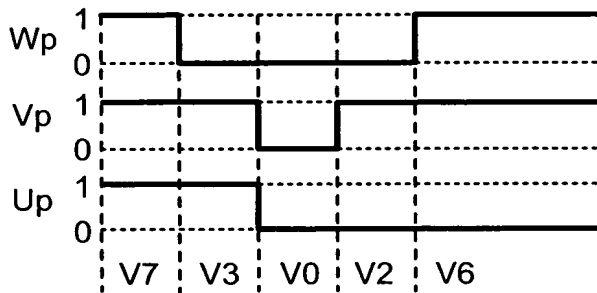


FIG.19B

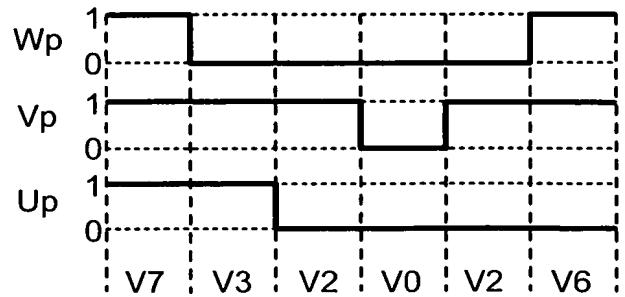


FIG.19C

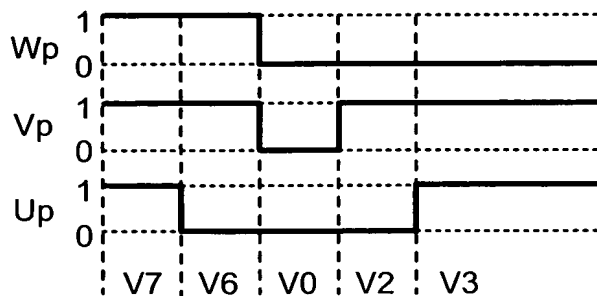


FIG.19D

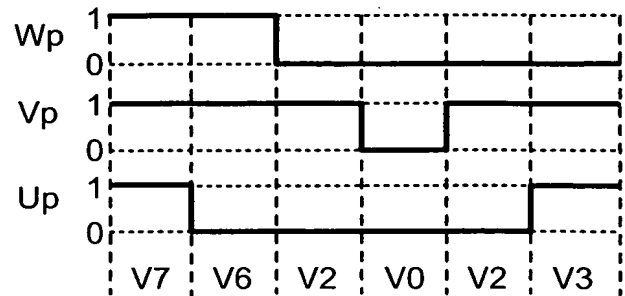


FIG.20A

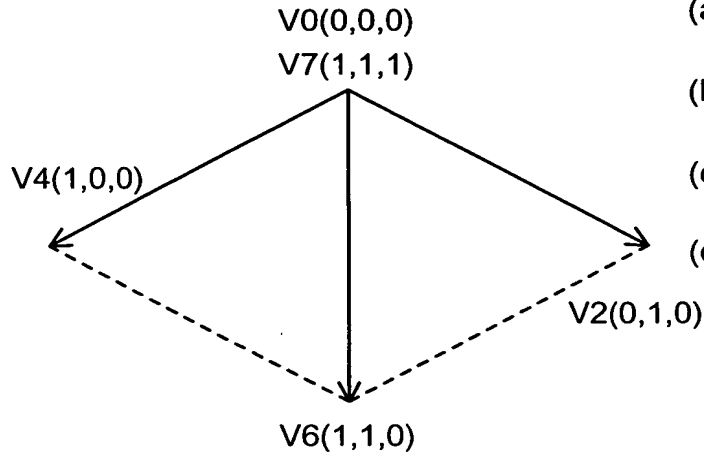


FIG.20B

- (a)  $V7 \Rightarrow V6 \Rightarrow V2 \Rightarrow V0 \Rightarrow V4$
- (b)  $V7 \Rightarrow V6 \Rightarrow V2 \Rightarrow V0 \Rightarrow V4 \Rightarrow V6$
- (c)  $V7 \Rightarrow V6 \Rightarrow V4 \Rightarrow V0 \Rightarrow V2$
- (d)  $V7 \Rightarrow V6 \Rightarrow V4 \Rightarrow V0 \Rightarrow V2 \Rightarrow V6$

FIG.21A

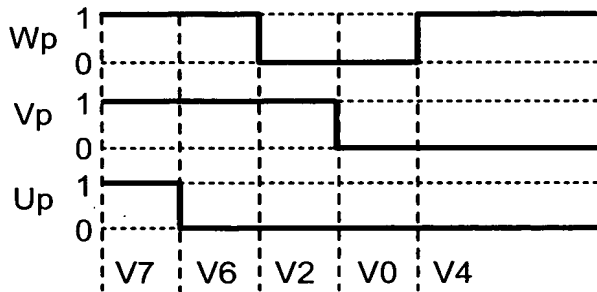


FIG.21B

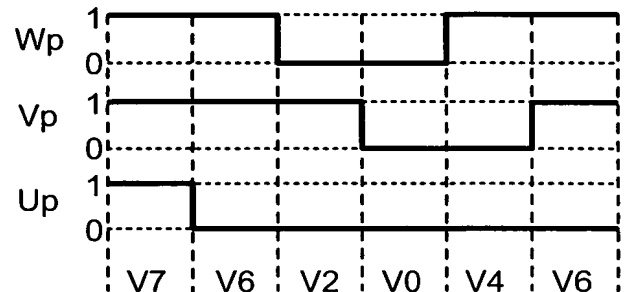


FIG.21C

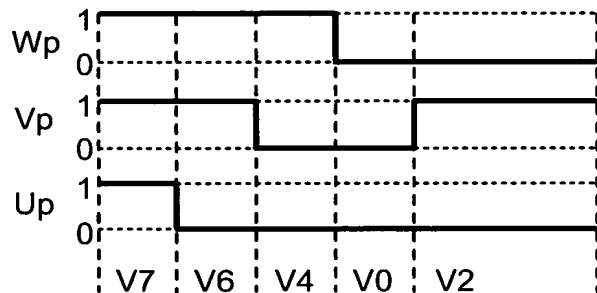


FIG.21D

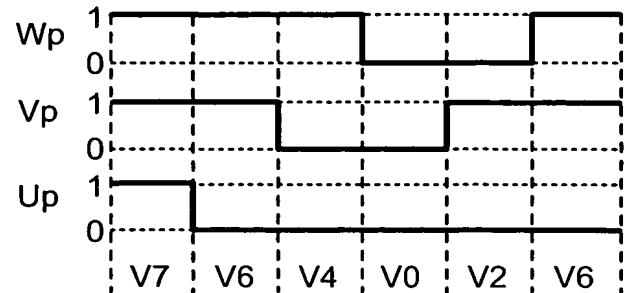


FIG.22A

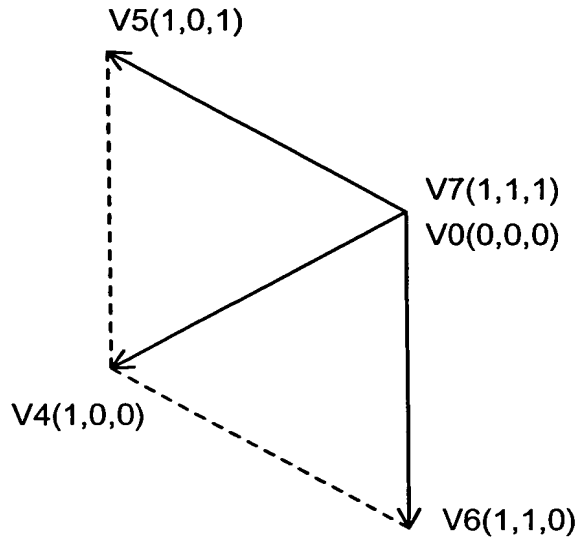


FIG.22B

- (a)  $V7 \Rightarrow V6 \Rightarrow V0 \Rightarrow V4 \Rightarrow V5$
- (b)  $V7 \Rightarrow V6 \Rightarrow V4 \Rightarrow V0 \Rightarrow V4 \Rightarrow V5$
- (c)  $V7 \Rightarrow V5 \Rightarrow V0 \Rightarrow V4 \Rightarrow V6$
- (d)  $V7 \Rightarrow V5 \Rightarrow V4 \Rightarrow V0 \Rightarrow V4 \Rightarrow V6$

FIG.23A

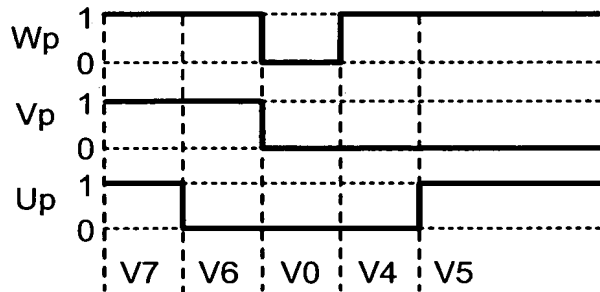


FIG.23B

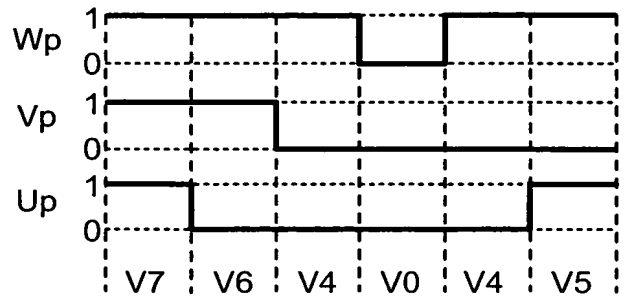


FIG.23C

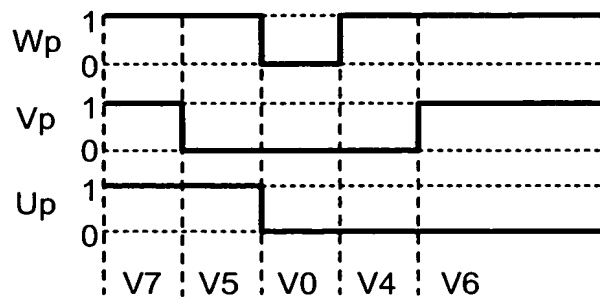


FIG.23D

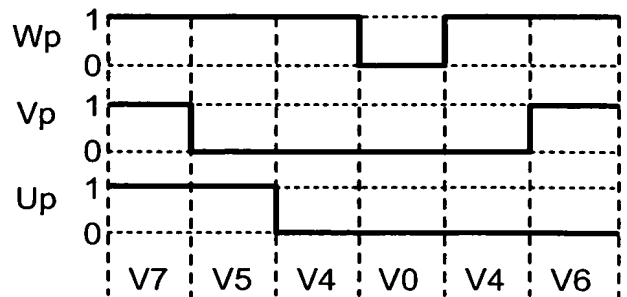


FIG.24A

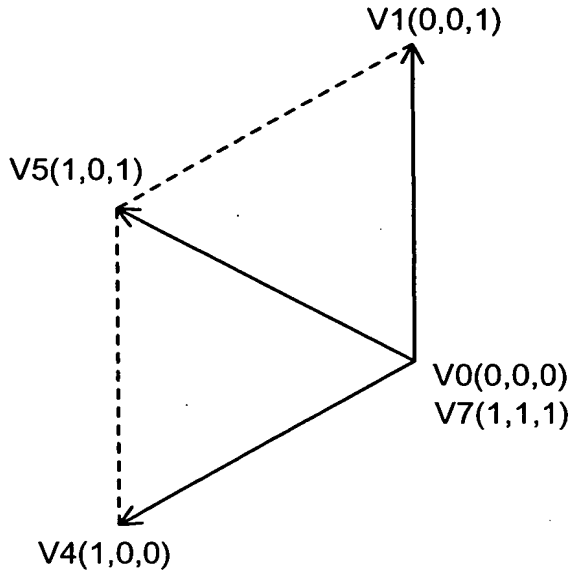


FIG.24B

- (a)  $V7 \Rightarrow V5 \Rightarrow V4 \Rightarrow V0 \Rightarrow V1$
- (b)  $V7 \Rightarrow V5 \Rightarrow V4 \Rightarrow V0 \Rightarrow V1 \Rightarrow V5$
- (c)  $V7 \Rightarrow V5 \Rightarrow V1 \Rightarrow V0 \Rightarrow V4$
- (d)  $V7 \Rightarrow V5 \Rightarrow V1 \Rightarrow V0 \Rightarrow V4 \Rightarrow V5$

FIG.25A

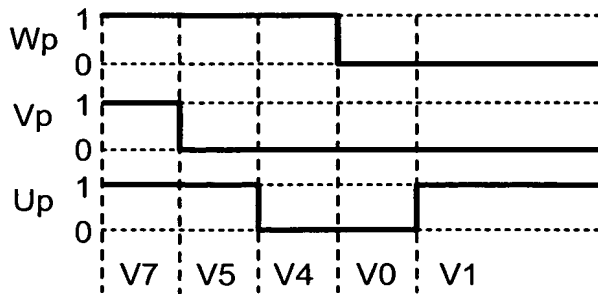


FIG.25B

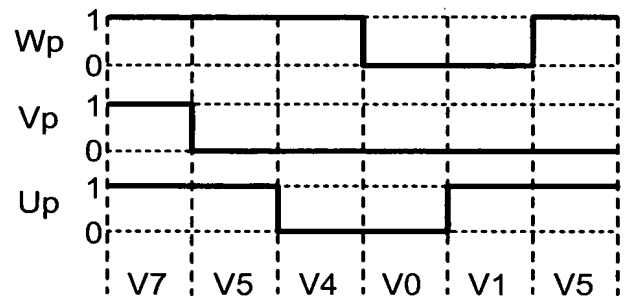


FIG.25C

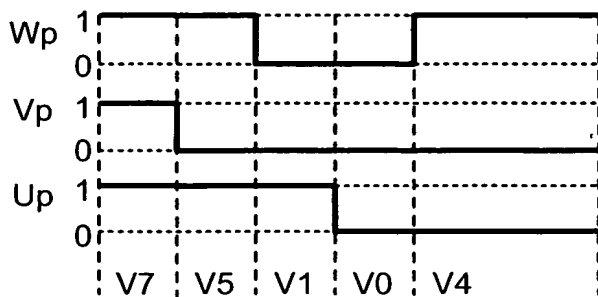


FIG.25D

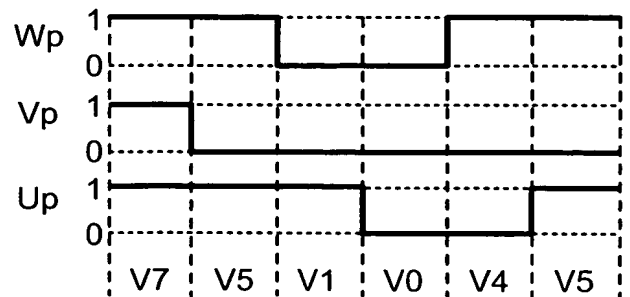


FIG.26A

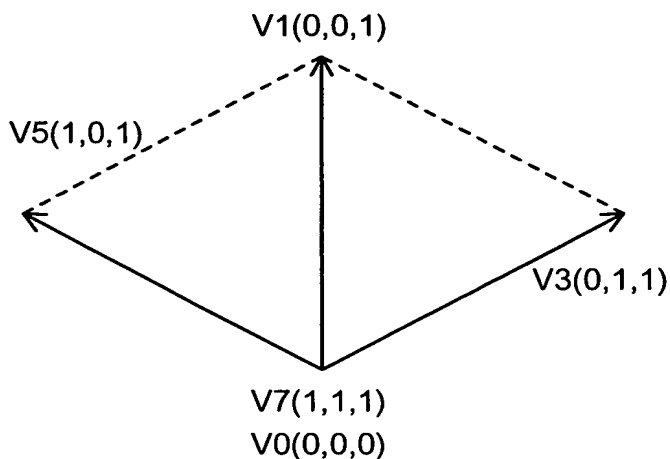


FIG.26B

- (a)  $V7 \Rightarrow V5 \Rightarrow V0 \Rightarrow V1 \Rightarrow V3$
- (b)  $V7 \Rightarrow V5 \Rightarrow V1 \Rightarrow V0 \Rightarrow V1 \Rightarrow V3$
- (c)  $V7 \Rightarrow V3 \Rightarrow V0 \Rightarrow V1 \Rightarrow V5$
- (d)  $V7 \Rightarrow V3 \Rightarrow V1 \Rightarrow V0 \Rightarrow V1 \Rightarrow V5$

FIG.27A

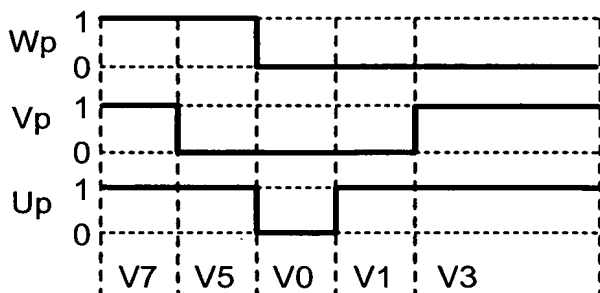


FIG.27B

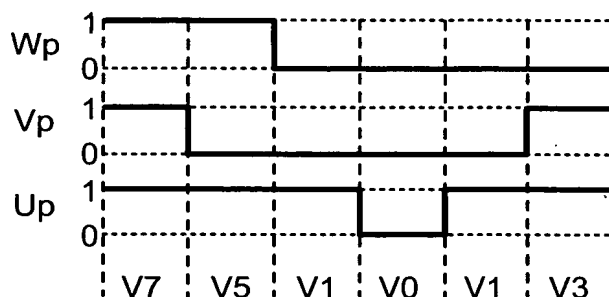


FIG.27C

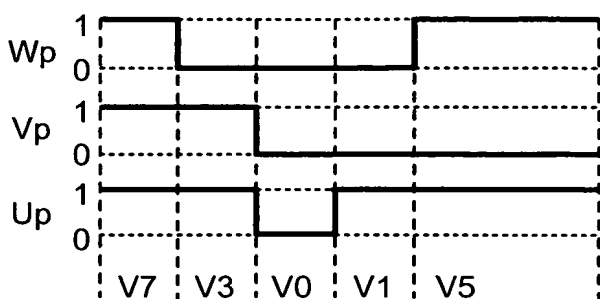


FIG.27D

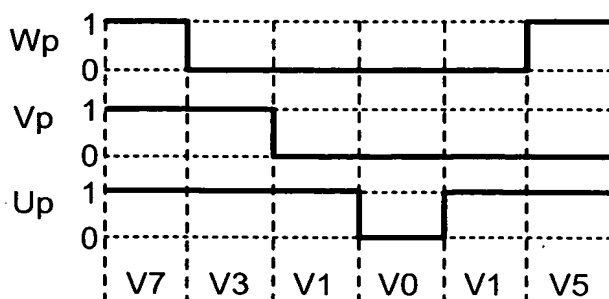


FIG.28A

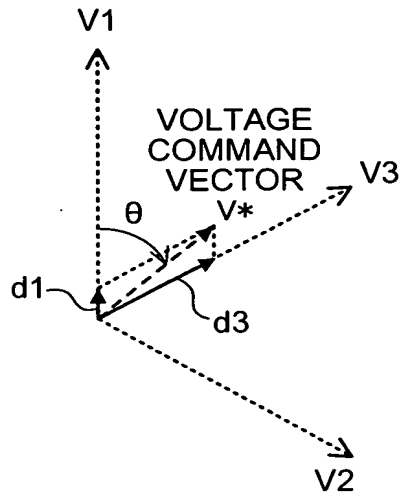


FIG.28B

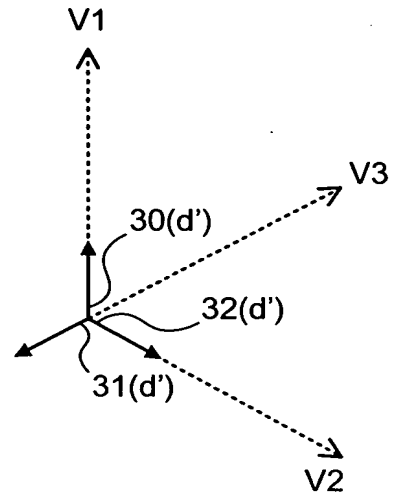


FIG.28C

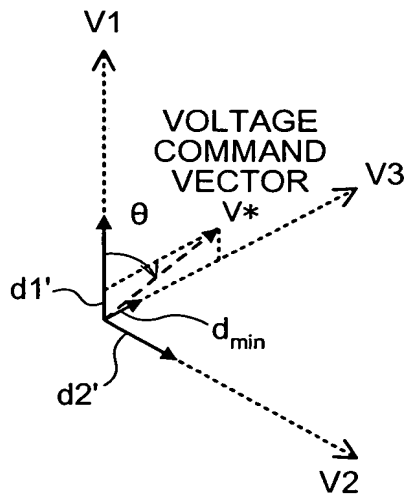




FIG.29A

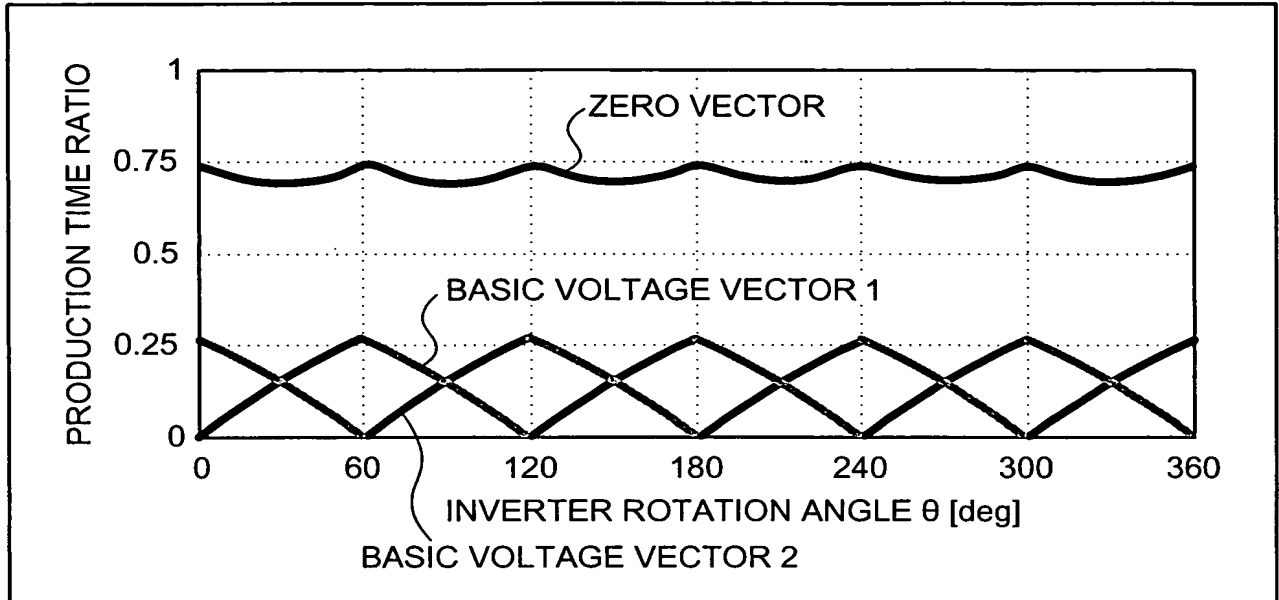


FIG.29B

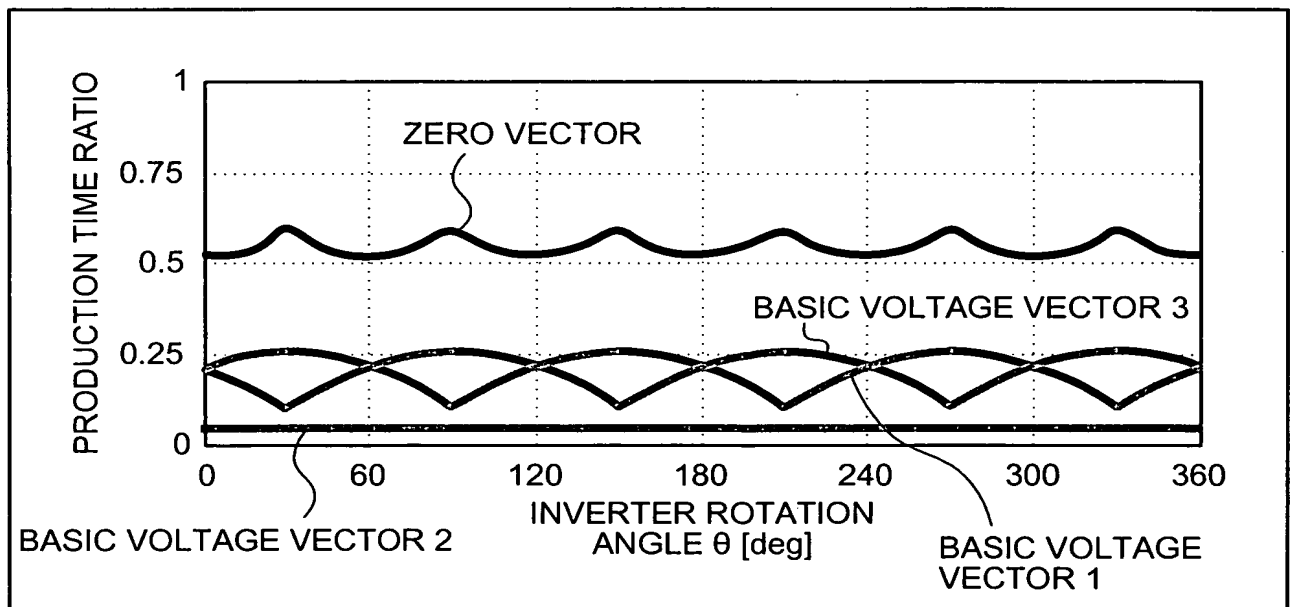


FIG.30A

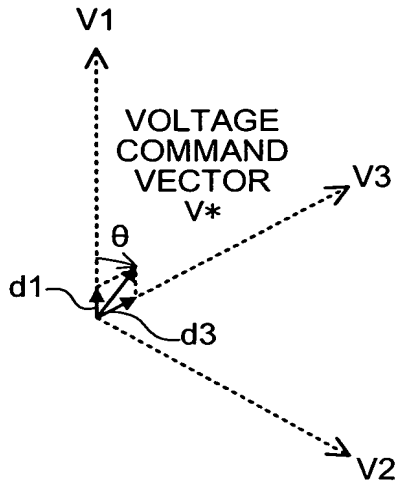


FIG.30B

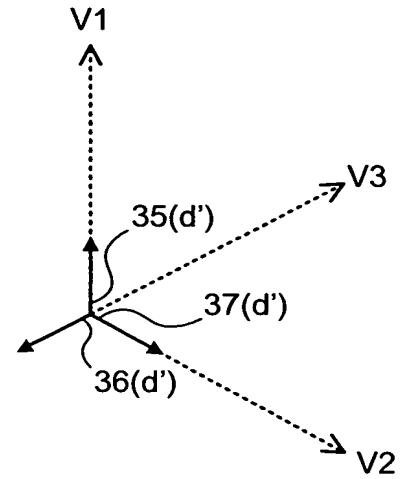


FIG.30C

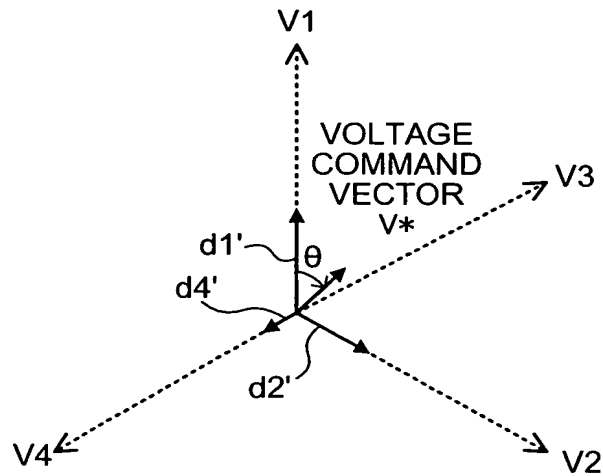


FIG.31A

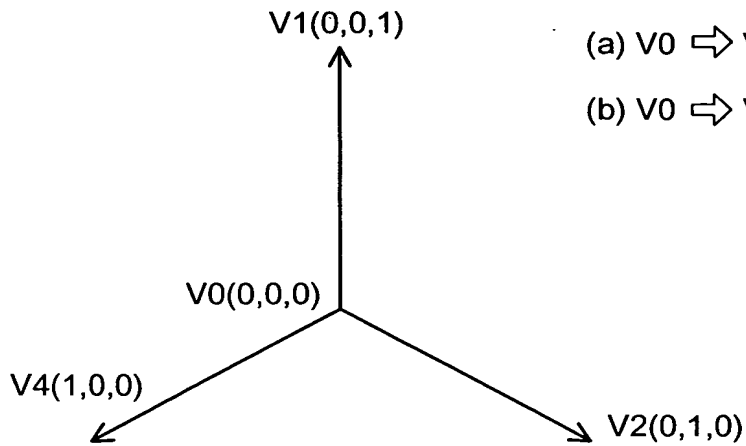


FIG.31B

(a)  $V0 \Rightarrow V1 \Rightarrow V0 \Rightarrow V2 \Rightarrow V0 \Rightarrow V4$

(b)  $V0 \Rightarrow V1 \Rightarrow V0 \Rightarrow V4 \Rightarrow V0 \Rightarrow V2$

FIG.32A

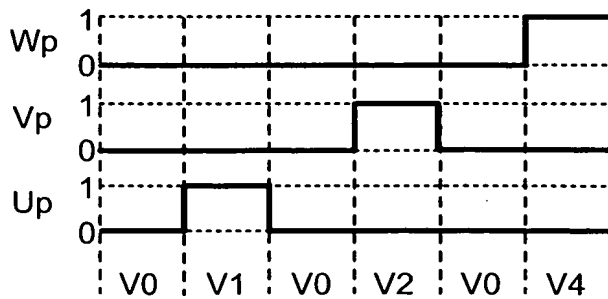


FIG.32B

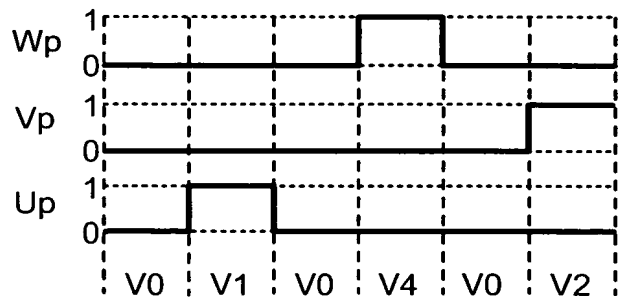


FIG.33A

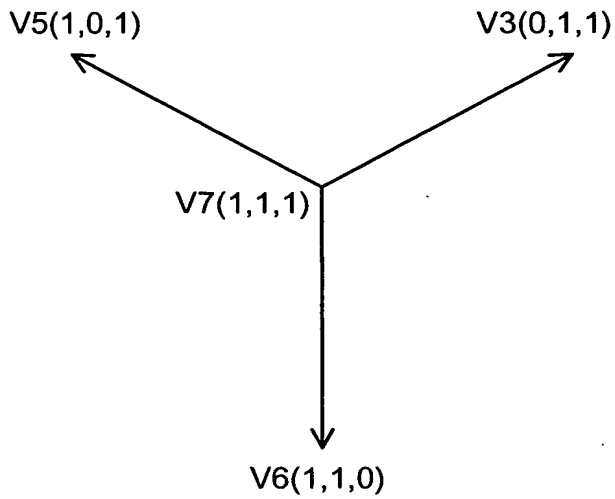


FIG.33B

(a)  $V7 \Rightarrow V3 \Rightarrow V7 \Rightarrow V6 \Rightarrow V7 \Rightarrow V5$   
 (b)  $V7 \Rightarrow V3 \Rightarrow V7 \Rightarrow V5 \Rightarrow V7 \Rightarrow V6$

FIG.34A

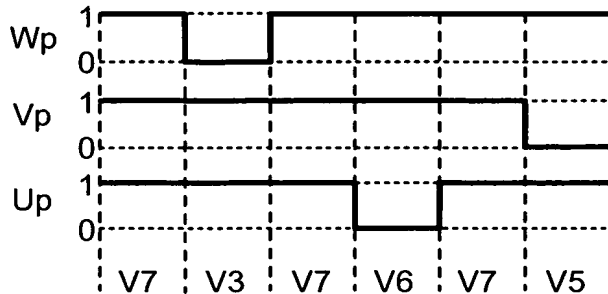


FIG.34B

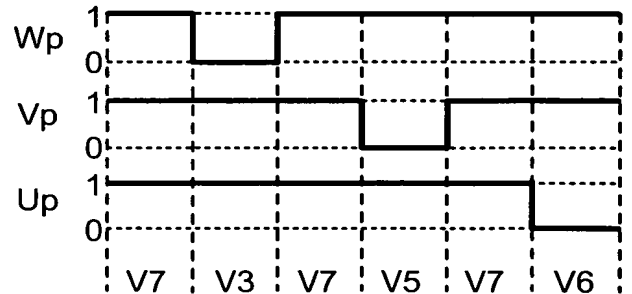


FIG.35A

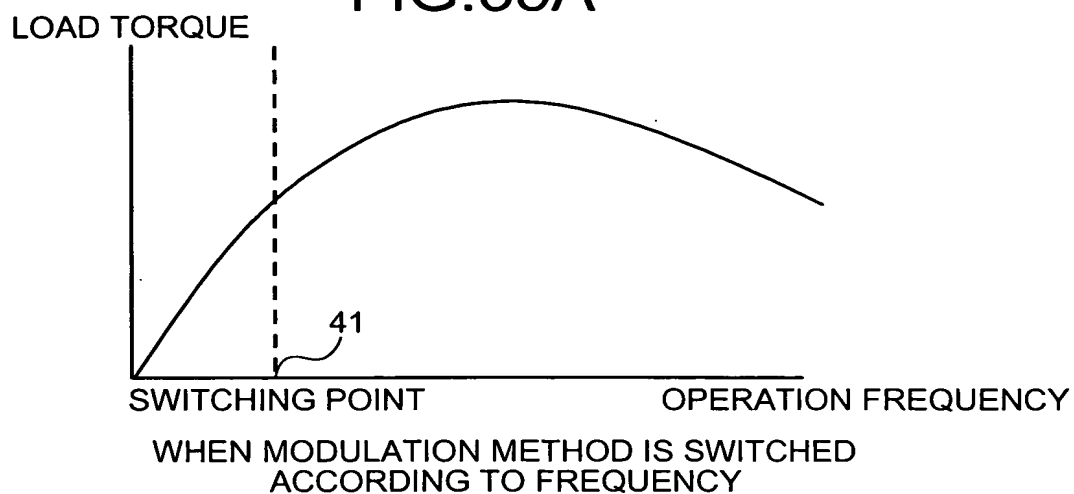


FIG.35B

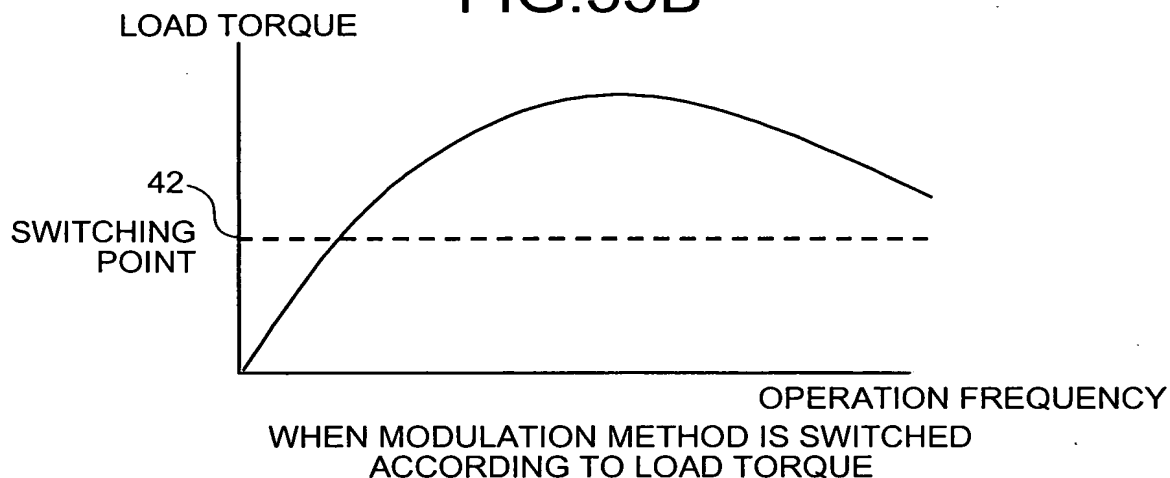
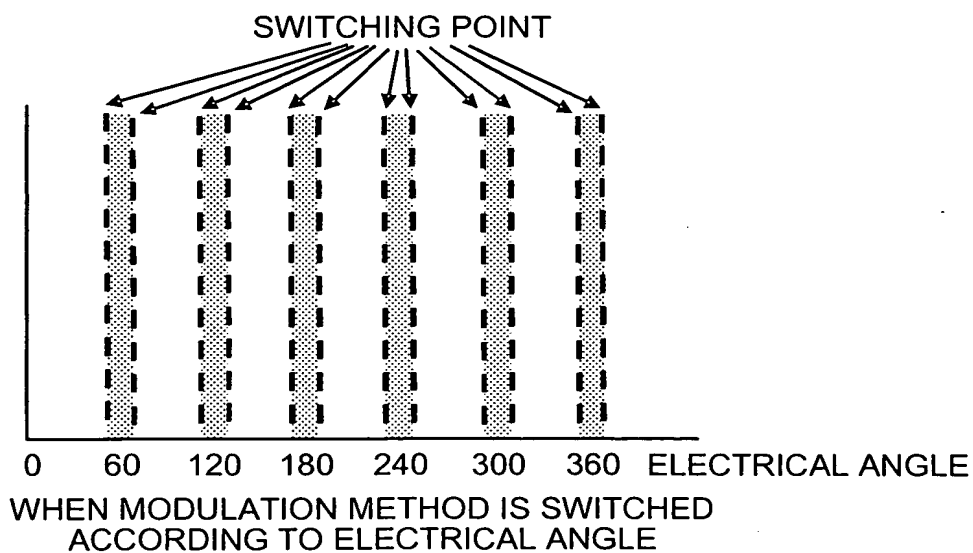


FIG.35C



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FIG.36

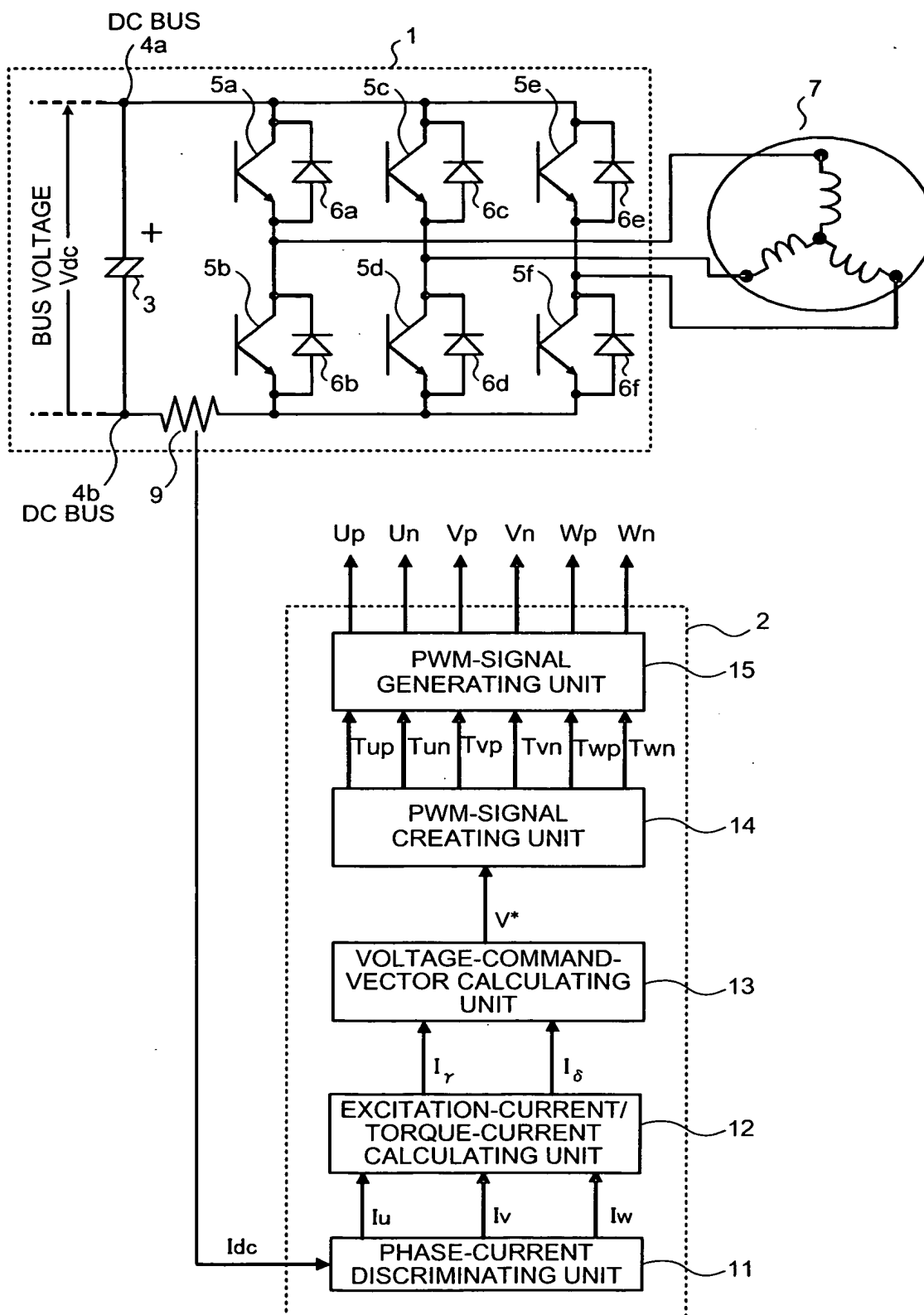


FIG.37

| BASIC<br>VOLTAGE<br>VECTOR | Wp<br>(W-PHASE<br>POSITIVE SIDE<br>SWITCHING<br>ELEMENT<br>LOGICAL STATE) | Vp<br>(V-PHASE<br>POSITIVE SIDE<br>SWITCHING<br>ELEMENT<br>LOGICAL STATE) | Up<br>(U-PHASE<br>POSITIVE SIDE<br>SWITCHING<br>ELEMENT<br>LOGICAL STATE) | OBSERVABLE<br>PHASE<br>CURRENT |
|----------------------------|---|---|---|--------------------------------|
| V0                         | 0   | 0   | 0   | OBSERVATION<br>IMPOSSIBLE      |
| V1                         | 0   | 0   | 1   | Iu                             |
| V2                         | 0   | 1   | 0   | Iv                             |
| V3                         | 0   | 1   | 1   | -Iw                            |
| V4                         | 1   | 0   | 0   | Iw                             |
| V5                         | 1   | 0   | 1   | -Iv                            |
| V6                         | 1   | 1   | 0   | -Iu                            |
| V7                         | 1   | 1   | 1   | OBSERVATION<br>IMPOSSIBLE      |

FIG.38

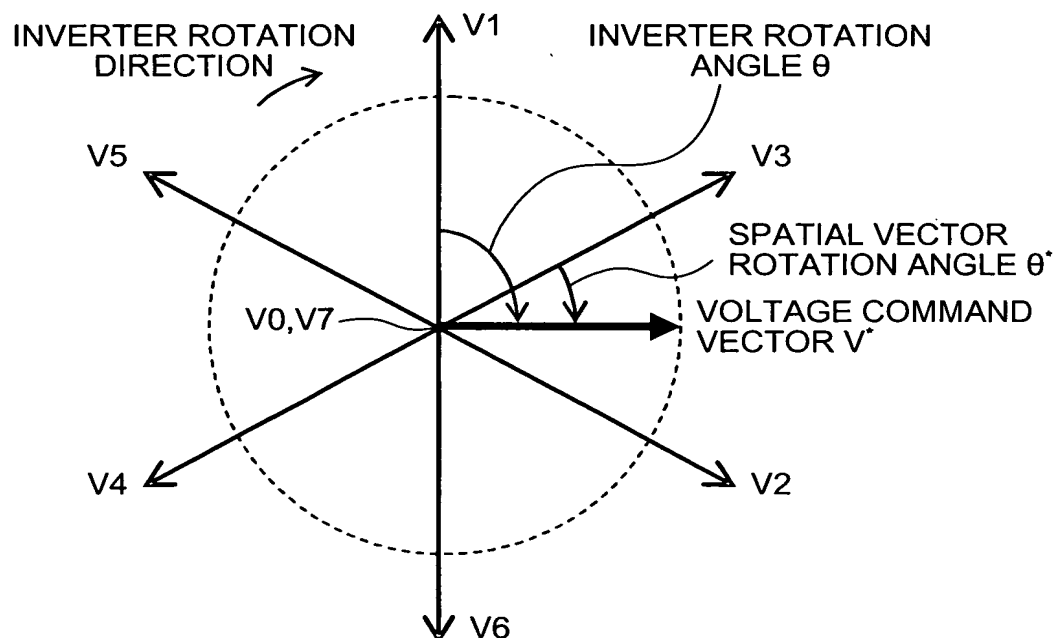


FIG.39A

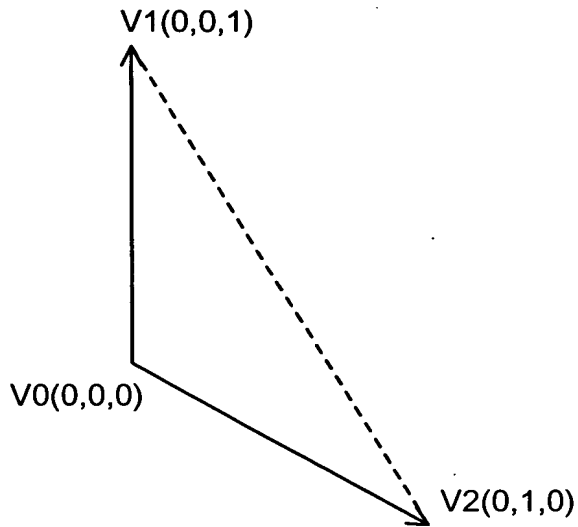


FIG.39B

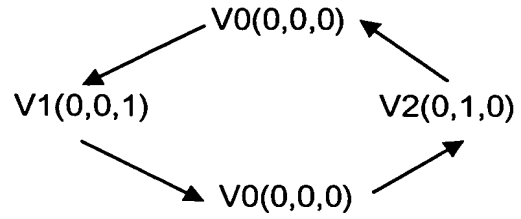


FIG.40

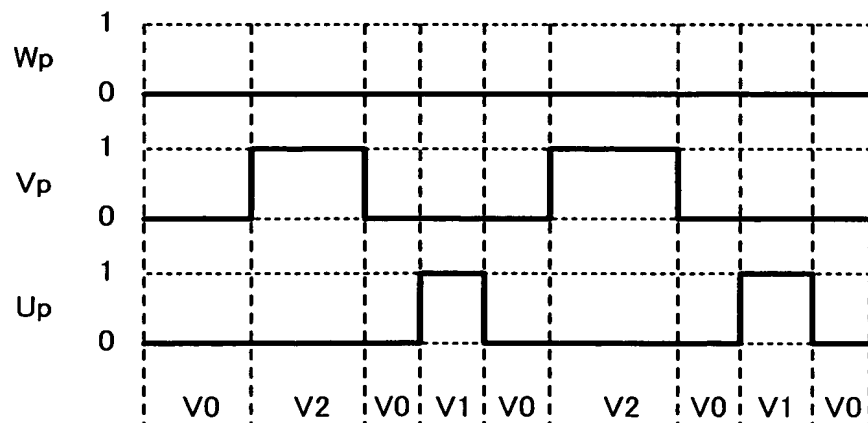




FIG.41A

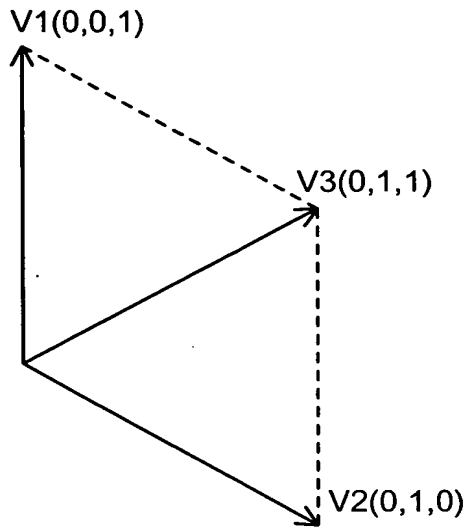


FIG.41B

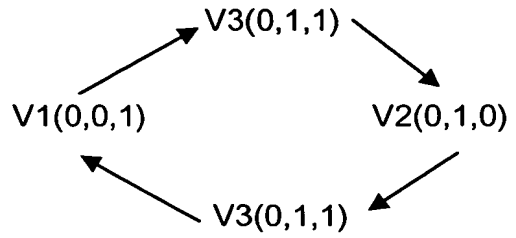


FIG.42

